

## Abstract

### METHOD AND SYSTEM FOR BRANCH METRIC CALCULATION IN A VITERBI DECODER

In a convolutional decoder, eight branch labels for branches in two  
5 trellis butterflies are calculated using a single output of an encoder. For a  
group of four consecutive states,  $S_i$ ,  $S_{i+1}$ ,  $S_{i+2}$ , and  $S_{i+3}$ , state  $S_{i+3}$  is loaded  
into a convolutional encoder and the convolutional encoder input bit is set to  
1. The output bits of the convolutional encoder are used as a branch label in  
a first trellis butterfly. A branch label in the second trellis butterfly is  
10 calculated with a formula in a branch label calculator using the  
convolutional encoder output bits as an input to the formula. The remaining  
branch labels are calculated from the convolutional encoder output and the  
branch label output from the branch label calculator. Selected bits of the  
branch labels are used to address a small branch metric register file.